NOTE XVIII.

THE LAND- AND FRESHWATER-MOLLUSCS OF THE DUTCH WEST-INDIAN ISLANDS

BY

Dr. J. H. VERNHOUT.

As I stated in my paper on the non-marine Molluscs of Surinam (p. 1 of this volume), our knowledge of the Mollusc-fauna of the Dutch colonies in America is only very little. In that paper I exposed all that is known, up to the present time, of the non-marine shell-bearing molluscs of Surinam; at present I will do the same with regard to the other Dutch colony in America, viz. the colony of Curaçao.

This colony consists of two groups of small islands, all placed under one Governor, residing in the principal island Curaçao, which has given its name to the whole colony. One group, near the coast of Venezuela, consists of the islands Aruba, Curaçao, Little Curaçao, Bonaire and Little Bonaire. The other group, situated in the northern part of the chain of the Lesser Antilles, comprises the small islands St. Eustatius, Saba and St. Martin; the latter only partly, viz. the south of the island, the northern part belonging to France.

When I said that very little is known about the land- and freshwater molluscan fauna of our West-Indian islands, I ought to have made an exception for St. Martin. In his paper on land- and freshwater-molluscs of Guadeloupe and its dependencies (Journ. de Conch. 38, p. 19), H. Mazé gives a catalogue of the land- and freshwater-molluscs of St. Martin, with carefully stated localities. He enumerates

48 species from that small island. There is no reason to expect that the other islands, some of them moreover being larger than St. Martin, should be in a much worse condition for molluscan life than this island. It is only the want of carefully exploring the islands, that accounts for the small number of molluscs recorded from them.

It is much to be regretted that the Leyden Museum possesses only 9 species of the land- and freshwater-molluscs of the Dutch West-Indian islands, 7 of them from Curaçao (4 however new for that island, so far as I know), 1 from Bonaire, and 1 from St. Martin.

In order to get a survey of the terrestrial and fluviatile molluscs, at present recorded from the Dutch islands in West-India, I have compiled the following lists, giving for each island the molluscs hitherto known. Well stated localities on the islands, at which the various species have been collected, are wanting in most cases. St. Martin only is making a favorable exception in this respect.

I have added a list of the papers, in which I found mentioned the molluscs, as inhabiting the different islands. Many references in this Bibliography are second-hand, owing to the fact that the library of the Leyden Museum possesses only very few periodicals and papers dealing with Malacology; moreover many important malacological periodicals are not present in any public library in the Netherlands. This fact will account for its probable incompleteness, and will also, I hope, excuse the errors it might contain.

Lately Mr. M. M. Schepman wrote to me, that he had composed, already in the year 1911, a list of the Mollusca of the Dutch West-Indies for an Encyclopedia of Dutch West-India, but that, owing to some contributors not sending in their manuscripts, his paper has not yet been published at this moment. I am sorry not to have been able to consult this paper, that, no doubt, will contain valuable matter as regards our knowledge of this subject.

In the following lists, the species represented in the Leyden Museum by specimens from the Dutch West-Indian islands, are marked with an asterisk.

Curaçao.

Species	*also recorded as*	*recorded by*
Pleurodonte incerta Fér.	*Helix incerta* Fér. var. *notabilis* Fér.	*Albers, 1860, p. 144.*
Pleurodonte lima Fér.	*Helix lima* Fér.	Pilsbry, 1889, p. 58.
**Drymaeus elongatus* Bolten.	*Bulimus elongatus* Bolten. *Bulimulus elongatus* Bolten.	Bland, 1866, p. 143; Bland, 1868, p. 191; Bland, 1880, p. 122; Smith, 1898, pp. 113, 114; Pilsbry, 1899, pp. 24, 26, 27; Pilsbry, 1903, p. 48; Leyden Museum (Dr. Epp).
Drymaeus multilineatus Say.	*Bulimus torallyi* d'Orb., var. *sisalensis* Mor. *Bulimus multilineatus* Say.	Bland, 1868, p. 192; Gibbons, 1879, p. 136; Pilsbry, 1899, pp. 27, 29; Pilsbry, 1903, p. 48.
**Liguus virgineus* L.		Leyden Museum (Dr. Epp).
**Cerion uva* L.	*Helix pentodon* Mke. *Pupa uva* L. *Strophia uva* L.	Pfeiffer, 1859, p. 154; Albers, 1860, p. 300; v. Martens, 1860, p. 210; Bland, 1861, p. 28; Bland, 1866, pp. 143, 366, 369; Bland, 1868, p. 192; v. Martens, 1873, p. 219; Lorié, 1887, p. 140; Smith, 1898, pp. 113, 114; Pilsbry, 1901, p. 180; Leyden Museum (Mr. van Koolwijk, Dr. Epp, Dr. Vuyck, Dr. Buitendijk, Mr. Weeks).
Brachypodella raveni Cr.	*Cylindrella raveni* Cr.	Crosse, 1872, p. 157; Crosse et Bland, 1873, p. 40; Smith, 1898, pp. 113, 115; Pilsbry, 1904, p. 77.
Microceramus spec.	*Macroceramus inermis* Gundl.	Gibbons, 1879, p. 136; Binney, 1883, p. 126; Pilsbry, 1903, p. 48; Pilsbry, 1904, pp. 113, 146, 154.
Leptinaria gloynii Gibb.	*Cionella gloynii* Gibb.	Gibbons, 1879, p. 135, at St. Ann's; Binney, 1883, p. 101; Pilsbry, 1906, pp. 322, 323, 324.
Leptinaria gloynii Gibb., var. *minuscula* Pils.		Pilsbry, 1906, p. 323.
Opeas micra d'Orb.	*Stenogyra octonoides* C. B. Ad.	Gibbons, 1879, p. 131; Pilsbry, 1903, p. 48.
Pupa fallax Say.		Gibbons, 1879, p. 131; Pilsbry, 1903, p. 48.
Pupa longurio Cr.		Crosse, 1872, p. 158; Crosse et Bland, 1873, p. 42; Smith, 1898, pp. 113, 115.
Succinea gyrata Gibb.		Gibbons, 1879, p. 136, at St. Ann's; Pilsbry, 1903, p. 48.
Planorbis spec.		Smith, 1898, p. 113.
**Melampus pusillus* Gmel.		Leyden Museum (Mr. Steenbergen).
**Melampus flavus* Gmel.		Leyden Museum (Dr. Epp).

Species	also recorded as	recorded by
Neritina zebra Brug.		v. Martens, 1879, p. 118.
Cistula raveni Cr.		Crosse 1872, p. 159; Crosse et Bland, 1873, p. 43; Smith, 1898, pp. 113, 116.
**Tudora megacheila* Pot. et Mich.	*Cyclostoma megacheilum* Pot. et Mich.	Bland, 1861, p. 28; Bland, 1866, p. 143: Bland, 1868, p. 191; v. Martens, 1873, p. 219; Lorié, 1887, p. 131; Smith, 1898, pp. 113, 116; Leyden Museum (Mr. van Koolwijk).
**Tudora costata* Mke.		Leyden Museum (Mr. van Koolwijk).

Among these 21 species and varieties, hitherto known from Curaçao, four species are new for this island: *Liguus virgineus* L., *Melampus pusillus* Gmel., *M. flavus* Gmel., and *Tudora costata* Mke. The occurrence of the first-named species, recorded only from the island Haïti, where it seems to be common, and from French Guyana, where it is rare and evidently introduced, is to be considered also for Curaçao as due to importation.

BONAIRE.

Species	also recorded as	recorded by
Drymaeus elongatus Bolten.	*Bulimus elongatus* Bolten. *Bulimulus elongatus* Bolten. *Bulimulus virgulatus* Fér.	Bland, 1861, p. 25; Bland, 1868, p. 192; Bland, 1880, p. 122; Crosse, 1892, p. 24; Smith, 1898, p. 113; Pilsbry, 1899, pp. 24, 27.
Brachypodella raveni Cr.	*Cylindrella raveni* Cr.	Smith, 1898, pp. 113, 115; Pilsbry, 1904, p. 77.
Pineria? bonairensis Smith.		Smith, 1898, pp. 113, 114; Pilsbry, 1904, pp. 113, 146, 154.
Leptinaria harterti Smith.	*Neosubulina harterti* Smith.	Smith, 1898, pp. 113, 115; Pilsbry, 1906, p. 323.
Amnicola coronata Pfr. var. *crystallina* Pfr.	*Paludestrina crystallina* Pfr.	Smith, 1898, p. 113.
**Tudora aurantiaca* Wood.	*Tudora versicolor* Pfr.	Bland, 1868, p. 192; Smith, 1898, pp. 113, 116; Leyden Museum (Mr. Preston).

Only 6 species of land- and freshwater-shells are recorded from Bonaire.

ARUBA.

Species	also recorded as	recorded by
Drymaeus elongatus Bolten.	*Bulimulus elongatus* Bolten.	Smith, 1898, pp. 113, 114; Pilsbry, 1899, p. 24.
Cerion uva L.		Smith, 1898, pp. 113, 114.

Hitherto only 2 species are known from Aruba.

Little Curaçao and Little Bonaire.

No Mollusca are recorded from these islets.

In order to exclude confusion, I wish to observe here, that the Aves Islands, on some maps indicated as a Dutch possession, and Los Roques, mentioned in Mr. Smith's paper on Curaçao-Shells, 1898, where was found the curious *Spiraxis (Ravenia) blandi* Cr., do not belong to the Netherlands, but to Venezuela.

From the Dutch islands in the neighbourhood of the coast of Venezuela, at present only 25 species and varieties are known.

Drymaeus elongatus occurs in Curaçao, Bonaire and Aruba.
Cerion uva is reported from Curaçao and Aruba.
Brachypodella raveni is mentioned from Curaçao and Bonaire.

The other species are recorded till now only either from Curaçao or from Bonaire.

St. Martin.

Species	also recorded as	locality	recorded by
Conulus gundlachi Pfr.	*Helix gundlachi* Pfr.	Marigot.	Mazé, 1890, p. 24.
Thysanophora subaquila Shuttl.	*Helix subaquila* Shuttl.	Environs of Philipsburg.	Mazé, 1890, p. 23.
Thysanophora vortex Pfr., var. *bracteola* Fér.	*Helix bracteola* Fér.	Shore at Marigot; Shore at Philipsburg.	Mazé, 1890, p. 23.
Pleurodonte lychnuchus Müll.[1]	*Helix lychnuchus* Müll.	Shore at Marigot.	Mazé, 1890, p. 24.
Drymaeus elongatus Bolten.	*Bulimus elongatus* Bolten. *Bulimus virgulatus* Fér.	Simson-Bay; Lowlands; Mountains.	Bland, 1861, p. 33; Mazé, 1890, p. 25; Pilsbry, 1899, pp. 24, 27.
Bulimulus guadalupensis Brug.	*Bulimus exilis* Gmel. *Bulimulus exilis* Gmel. *Bulimus exilis* Gmel., var. β et γ.	All parts of the island.	Bland, 1861, p. 33; Mazé, 1890, p. 24; Pilsbry, 1897, pp. 37, 39; Leyden Museum (Dr. Semmelink).
Bulimulus guadalupensis Brug. var. *eyriesii* Drou.	*Bulimulus eyriesii* Drou.	Morne des Accords.	Mazé, 1890, p. 24; Pilsbry, 1897, p. 40.
Bulimulus lehmanni Pfr.		Simson-Bay.	Mazé, 1890, p. 25; Pilsbry, 1897, p. 42.
Bulimulus limnoides Fér.		Marigot; Environs of Philipsburg.	Mazé, 1890, p. 26; Pilsbry, 1897, p. 43.

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1) As Mazé remarks probably introduced from elsewhere by some traveller; like *Liguus virgineus* in Curaçao.

Species	also recorded as	locality	recorded by
Bulimulus fraterculus „Fér." Pot. et Mich.		Grande baie; Philipsburg.	Mazé, 1890, p. 25.
Amphibulima depressa Rang.	*Pellicula depressa* Rang.	Morne Paradis.	Mazé, 1890, p. 27; Pilsbry, 1899, p. 243.
Brachypodella antiperversa Fér.	*Cylindrella collaris* Fér.	Grande Case.	Mazé, 1890, p. 27; Pilsbry, 1904, p. 80.
Pineria viequensis Pfr.	*Pineria schrammi* Fischer.	Simson-Bay; Simson-Pool.	Bland, 1880, p. 124; Binney, 1883, p. 126; Mazé, 1890, p. 27; Pilsbry, 1904, pp. 111, 112.
Subulina octona Brug.	*Stenogyra octona* Chemn.	Marigot; Grande Anse; Environs of Philipsburg.	Mazé, 1890, p. 22.
Opeas micra d'Orb.	*Stenogyra octonoides* C.B.Ad.	Almost all parts of the island.	Mazé, 1890, p. 22.
Opeas gracile Hutt.	*Stenogyra subula* Pfr.	Marigot.	Mazé, 1890, p. 22.
Obeliscus swiftianus Pfr.	*Stenogyra swiftiana* Pfr.	Baie verte.	Mazé, 1890, p. 23; Pilsbry, 1906, p. 268.
Leptinaria lamellata Pot. et Mich.	*Tornatellina lamellata* Pot. et Mich.	All parts of the island.	Mazé, 1890, p. 23.
Caecilioides gundlachi Pfr.	*Geostilbia gundlachi* Pfr. *Caecilianella gundlachi* Pfr.	Simson-Bay.	Binney, 1883, p. 101; Mazé, 1890, p. 23; Crosse, 1890*b*, p. 250; Crosse, 1891, p. 152.
Pupoides nitidulus Pfr.	*Bulimulus nitidulus* Pfr.	Environs of Philipsburg.	Mazé, 1890, p. 26.
Pupa pellucida Pfr.		Marigot; Grande Anse; Philipsburg.	Mazé, 1890, p. 26.
Succinea candeana Lea.		Lowlands; Bay of Marigot; Bluff.	Mazé, 1890, p. 27.
Succinea approximans Shuttl. var. *martiniana?* Mazé.		Etang aux Huîtres.	Mazé, 1890, p. 28; Crosse, 1890*a*, p. 47.
Omalonyx guadeloupensis Less.		Morne Paradis.	Mazé, 1890, p. 28.
Melampus pusillus Gmel.		Shore at Marigot; Bay of Philipsburg.	Mazé, 1890, p. 29
Melampus flavus Gmel.		Shore at Marigot; Bay of Philipsburg.	Mazé, 1890, p. 29.
Melampus coffea Gmel.		Simson-Bay.	Mazé, 1890, p. 29.
Melampus cingulatus Pfr.		Shore at Philipsburg.	Mazé, 1890, p. 29.
Pedipes mirabilis Mühlf.		Bay of Marigot; Shore at Philipsburg; Grande Baie.	Mazé, 1890, p. 29; Crosse, 1890*a*, p. 50.

Species	*also recorded as*	*locality*	*recorded by*
Aplecta sowerbyana d'Orb.		*Simson-Bay.*	*Mazé, 1890, p. 30.*
Aplecta orbignyi Mazé.		Simson-Pool.	Mazé, 1890, p. 30.
Physa guadeloupensis Fischer.		Etang aux Huîtres; Simson-Pool.	Mazé, 1890, p. 30.
Amnicola coronata Pfr.	*Paludestrina candeana* d'Orb.	Marigot; Environs of Philipsburg.	Mazé, 1890, p. 31; Crosse, 1892, p. 40; Crosse et Fischer, 1900, p. 267.
Amnicola auberiana d'Orb.	*Paludestrina auberiana* d'Orb.	Marigot; Environs of Philipsburg.	Mazé, 1890, p. 31.
Ampullaria glauca L.	*Ampullaria effusa* Müller.	Lowlands of the island.	Mazé, 1890, p. 31.
Tudora pupaeformis Sow., var. β.		Simson-Bay.	Bland, 1871, p. 58; Mazé, 1890, p. 31.
Chondropoma crenulatum Fér.		Morne Paradis.	Mazé, 1890, p. 32.
Chondropoma julieni Pfr.		Morne Paradis.	Mazé, 1890, p. 32.
Choanapoma occidentale Pfr.		Morne Paradis.	Mazé, 1890, p. 32.
Truncatella caribaeensis Sow.		Shore at Marigot; Grande Baie; Shore at Philipsburg.	Mazé, 1890, p. 32.
Truncatella scalaris Mich.		Shore at Marigot.	Mazé, 1890, p. 33.
Truncatella modesta C.B. Ad.		Shore at Marigot; Grande Baie; Philipsburg.	Mazé, 1890, p. 33.
Truncatella bilabiata Pfr.		Shore at Philipsburg.	Mazé, 1890, p. 33.
Truncatella clathrus Lowe.		Grande Baie.	Mazé, 1890, p. 33.
Helicina fasciata Lam.	*Helicina picta* Fér.	All parts of the island.	Mazé, 1890, p. 33.
Neritina virginea Lam.		Simson-Bay; Canal of Simson-Pool.	Mazé, 1890, p. 34.
Neritina viridis L.		Shore at Marigot; Shore at Philipsburg; Grande Baie.	Mazé, 1890, p. 34; Crosse et Fischer, 1900, pp. 492, 493.
Eupera viridans Morel.	*Sphaerium viridans* Morel.	Simson-Bay.	Mazé, 1890, p. 34.

In this rather small island 48 species and varieties have been collected.

ST. EUSTATIUS.

Species	recorded by
Drymaeus elongatus Bolten.	Pilsbry, 1899, pp. 24, 27.
Bulimulus diaphanus Pfr.	Pilsbry, 1897, p. 47.
Opeas micra d'Orb.	Pilsbry, 1906, pp. 193, 195.

Species	also recorded as	recorded by
Opeas gracile Hutt.		Pilsbry, 1906, p. 198.
Opeas goodalli Miller.		Pilsbry, 1906, p. 200.

Five species only are known from this island; the 3 *Opeas* are widely distributed in South-America, Central-America and in the West-Indies.

SABA.

Species	also recorded as	recorded by
Bulimulus diaphanus Pfr.	*Bulimulus fraterculus* Fér., var.	Bland, 1880, p. 124; Pilsbry, 1897, p. 47.
Amphibulima patula Brug.		Bland, 1880, p. 124; Pilsbry, 1899, pp. 235, 237.
Succinea riisei? Pfr.		Bland, 1880, p. 124.
Helicina fasciata Lam.	*Helicina picta* Fér.	Bland, 1880, p. 124.

Besides these four species I found mentioned as occurring in Saba: "several of the widely distributed *Stenogyrae*" (Bland 1880, p. 124). These species probably will prove to be *Subulina octona*, *Opeas micra*, *O. gracile*, *O. goodalli.*

The 3 islands of this group, according to our present knowledge, do not possess one species common to all of them, one or two *Opeas* species perhaps excepted.

Drymaeus elongatus, *Opeas micra* and *Opeas gracile* are occurring in St. Martin and in St. Eustatius.
Bulimulus diaphanus is common to St. Eustatius and Saba.
Helicina fasciata occurs in St. Martin and in Saba.

The following species are recorded from both groups of Dutch West-Indian islands.

Drymaeus elongatus: Curaçao, Bonaire, Aruba, St. Martin, St. Eustatius.
Opeas micra: Curaçao, St. Martin, St. Eustatius.
Melampus pusillus: Curaçao, St. Martin.
Melampus flavus: Curaçao, St. Martin.

The totality of species and varieties, hitherto recorded from all the islands together, amounts to 73; their geographical distribution is given in the following Table. The first 5 divisions of this Table are agreeing with section I, II, III, IV and V*a* of Bland (1871, pp. 56—58); the sixth and seventh division with his section Vb.

SPECIES.	Cuba Bahamas Bermudas C Ba Be	Jamaica J	Haiti H	Portorico Vieques S. Thomas S. John Tortola Anegada Sombrero Anguilla S. Martin S. Barthélemy S. Croix P V Th J To Ad S Ag **M** B C	Saba S. Eustatius S. Kitts Nevis Barbuda Antigua Montserrat Guadeloupe Désirade Marie-Galante Saintes Dominica Martinique Barbados **S** **E** K N Ba A Mo G De Ma St Do Mt Bs	S. Lucia S. Vincent Grenadines Grenada L V Gs Gr	Trinidad Tobago Tr To	Curaçao Bonaire Aruba **C** **B** **A**	Venezuela Guyana Ve G	Other American localities. The Keys are comprised in Florida.
Conulus gundlachi	C.	J.	H.	P. V. Th. **M.**	G.	—	—	—	—	Florida, Nicaragua.
Thysanophora subaquila	—	—	—	P. V. Th. **M.** B.	G.	—	—	—	—	—
Thysanophora vortex, 1) var. bracteola	(C) (Be)	—	(H)	(P) (V) (Th) **M.** (C)	G. De. Ma. St. Mt. (Bs)	—	—	—	—	Florida, Georgia.
Pleurodonte lychnuchus	—	—	—	**M.**	G. St.	—	—	—	—	—
Pleurodonte incerta	—	—	—	P.	—	—	—	**C.**	—	—
Pleurodonte lima	—	—	—	P. V.	—	—	—	**C.**	—	—
Drymaeus elongatus	—	—	—	P. V. Th. J. To. Ad. Ag. **M.** B. C.	**E.** A. G. Mt.	—	—	**C. B. A.**	Ve?	Florida?
Drymaeus multilineatus	—	—	—	—	—	—	—	**C.**	Ve.	Colombia, Yucatan, Florida.
Bulimulus guadalupensis	—	J.	H.	P. V. Th. To. **M.** B.	K. Ba. A. Mo. G. De. Ma. St. Do. Mt. Bs.	V?	—	—	G?	—
Bulimulus guadalupensis, var. eyriesii	—	—	—	P. V, Th. J. **M.** C.	K. N. A. G. Bs.	L.	Tr?	—	G.	—
Bulimulus lehmanni	—	—	—	Ag. **M.**	—	—	—	—	—	—
Bulimulus limnoides	—	—	—	**M.**	G.	V.	—	—	—	—
Bulimulus fraterculus	—	—	—	**M.**	G.	—	—	—	—	—
Bulimulus diaphanus	—	—	—	P. V. Th.	**S. E.** Bs.	—	—	—	—	—
Liguus virgineus	—	—	H.	—	—	—	—	**C.**	G.	—
Amphibulima patula	—	—	—	—	**S.** K. G. Ma. Do.	—	—	—	—	—
Amphibulima depressa	—	—	—	**M.**	G.	—	—	—	—	—
Cerion uva	—	—	—	—	—	—	—	**C. A.**	—	—
Brachypodella raveni	—	—	—	—	—	—	—	**C. B.**	—	—
Brachypodella antiperversa	—	—	—	**M.** B.	G. Ma. St. Mt.	V.	—	—	—	—
Pineria viequensis	—	—	—	V. Ag. **M.** B.	G. Bs.	—	—	—	—	—
Pineria? bonairensis	—	—	—	—	—	—	—	**B.**	—	—
Microceramus spec.	—	—	—	—	—	—	—	**C.**	—	—
Subulina octona	C. Ba. Be.	J.	H.	P. V. Th. J. To. **M.** B	A. G. De. Ma. St. Do. Mt. Bs.	L. V. Gs. Gr.	Tr.	—	Ve. G.	Florida, Yucatan, other Mexico-localities, British Honduras, Guatemala, Nicaragua, Costarica, Colombia, Brazil, Ecuador.
Opeas micra	C. Be.	J.	H.	P. V. Th. J. **M.** B. C.	**E.** A. G. De. Ma. St. Mt. Bs.	L. V. Gs. Gr.	Tr.	**C.**	G.	Florida, Yucatan, other Mexico-localities, Honduras, Nicaragua.
Opeas gracile	C.	J.	H.	P. Th. J. **M.** B. C.	**E.** A. G. De. Ma. St. Mt. Bs.	Gr.	Tr.	—	Ve. G.	Yucatan, Honduras, British Honduras, Guatemala, Nicaragua, Costarica, Panama, Colombia, Brazil, Ecuador, Cocos-Island, Alabama.
Opeas goodalli	C.	J.	H.	P. Th.	**E.** G. Ma. St. Bs.	L. V.	—	—	Ve.	Mexico, Nicaragua, Costarica, Panama, Colombia, Brazil, Ecuador, Bolivia, Argentina.
Obeliscus swiftianus	C. Be.	—	—	P. V. Th. J. **M.** C.	G.	—	—	—	—	—
Leptinaria lamellata	—	J.	—	P. To. **M.** B.	G. De. Ma. St. Do. Mt. Bs.	V. Gs. Gr.	Tr.	—	Ve. G.	Colombia, Brazil, Bolivia.
Leptinaria gloynii	—	—	—	—	—	—	—	**C.**	—	—
Leptinaria gloynii, var. minuscula	—	—	—	—	—	—	—	**C.**	—	—
Leptinaria harterti	—	—	—	—	—	—	—	**B.**	—	—
Caecilioides gundlachi	—	J.	H.	Th. **M.**	G. Bs.	—	—	—	—	—
Pupoides nitidulus	C. Ba. Be.	J.	H.	P. **M.** C.	—	—	—	—	—	—

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1) Between parentheses the typical *T. vortex*.

SPECIES.	Cuba Bahamas Bermudas C Ba Be	Jamaica J	Haïti H	Portorico Vieques S. Thomas S. John Tortola Anegada Sombrero Anguilla S. Martin S. Barthélemy S. Croix P V Th J To Ad S Ag M B C	Saba S. Eustatius S. Kitts Nevis Barbuda Antigua Montserrat Guadeloupe Désirade Marie-Galante Saintes Dominica Martinique Barbados S E K N Ba A Mo G De Ma St Do Mt Bs	S. Lucia S. Vincent Grenadines Grenada L V Gs Gr	Trinidad Tobago Tr To	Curaçao Bonaire Aruba C B A	Venezuela Guyana Ve G	Other American localities. The Keys are comprised in Florida.
Pupa pellucida	C. Ba. Be.	J.	H.	P. V. Th. M. C.	Bs.	Gr.	—	—	—	Texas, Yucatan, Guatemala.
Pupa fallax	—	—	—	—	—	—	—	C.	—	—
Pupa longurio	—	—	—	—	—	—	—	C.	—	—
Succinea candeana	—	—	—	M. B.	G. St. Mt.	—	—	—	—	—
Succinea approximans 1)	—	—	—	P. V. Th. M.	G. De. Do.	L. Gr.	Tr.	—	—	Continental America.
Succinea riisei?	—	—	H.	P. C.	S.	—	—	—	—	—
Succinea gyrata	—	—	—	—	—	—	—	C.	—	—
Omalonyx guadeloupensis	—	—	—	M.	G.	—	Tr?	—	—	—
Planorbis spec.	—	—	—	—	—	—	—	C.	—	—
Melampus pusillus	C. Ba.	J.	H.	P. Th. M. B.	G. St. Mt.	—	Tr.	C.	Ve. G.	Florida.
Melampus flavus	C.	J.	H.	P. M. B.	G.	—	—	C.	Ve.	Florida.
Melampus coffea	C.	J.	H.	P. Th. M.	G. Mt.	—	Tr.	—	G	Florida, Texas, Yucatan, British Honduras.
Melampus cingulatus	C.	J.	H.	P. M.	—	V.	—	—	—	Florida.
Pedipes mirabilis	C. Be.	J.	H.	P. M. B.	G. Mt.	—	Tr.	—	—	—
Aplecta sowerbyana	C.	J.	—	P. V. Th. M. B.	G. De. Ma. St. Mt. Bs.	V. Gr.	Tr.	—	Ve. G.	Brazil, Uruguay, Patagonia.
Aplecta orbignyi	—	—	—	M.	G.	—	—	—	—	—
Physa guadeloupensis	—	—	—	M.	G.	—	—	—	—	—
Amnicola coronata	C.	J.	—	P. V. Th. J. M.	G.	—	—	—	Ve.	Texas, Mexico, San Salvador, Nicaragua, Colombia.
Amnicola coronata, var. crystallina	C.	J.	—	V. To.	G.	Gr.	—	B.	—	Yucatan, other Mexico-localities, British Honduras, Guatemala, San Salvador.
Amnicola auberiana	C.	—	—	M.	G.	—	—	—	—	—
Ampullaria glauca	—	—	—	M.	G. Ma. Mt.	Gr.	Tr.	—	Ve. G.	—
Tudora megacheila	—	—	—	—	—	—	—	C.	—	—
Tudora costata	—	—	—	—	—	—	—	C.	—	—
Tudora aurantiaca	—	—	—	—	—	—	—	B.	—	—
Tudora pupaeformis, 2) var. β.	—	—	(H)	(Ag) M.	—	—	—	—	—	—
Chondropoma crenulatum	—	—	—	M.	G. De. Ma. St.	—	—	—	—	—
Chondropoma julieni	—	—	—	S. M.	G.	—	—	—	—	—
Choanopoma occidentale	—	—	—	M.	Mt.	—	—	—	—	—
Cistula raveni	—	—	—	—	—	—	—	C.	—	—
Truncatella caribaeensis	C.	J.	H.	P. Th. M.	G. St. Mt.	—	—	—	—	Florida, Mexico.
Truncatella scalaris	C.	J.	—	M.	G. St.	—	—	—	—	—
Truncatella modesta	—	J.	—	M.	G. St. Mt.	—	—	—	—	—
Truncatella bilabiata	C.	J.	H.	P. Th. M.	—	—	Tr.	—	—	Florida, Mexico.
Truncatella clathrus	—	—	—	P. Th. M.	G. St.	—	—	—	—	—
Helicina fasciata	—	—	—	P. V. J. M.	S. K. G. De. Ma. St. Mt.	—	Tr.	—	—	—
Neritina zebra	—	—	—	P.	—	—	—	C.	Ve. G.	Panama, Brazil.
Neritina virginea	C.	J.	H.	P. V. Th. M. C.	A. G. Mt. Bs.	Gr.	Tr.	—	G.	Florida, Yucatan, other Mexico-localities, Honduras, British Honduras, Nicaragua, Costarica.
Neritina viridis	C. Be.	J.	H.	P. Th. J. Ag. M. C.	A. G. St. Mt. Bs.	L.	Tr.	—	—	Florida, Yucatan, other Mexico-localities, Costarica.
Eupera viridans	C.	—	—	M.	G.	—	—	—	—	—

1) Including the eventual variety from St. Martin.

2) Between parentheses the typical *T. pupaeformis*.

As regards the distribution of the species, recorded from St. Martin, as shown in the above Table, this island seems to occupy an intermediate position between the islands of section IV and those of section V *a*. It has 29 species and varieties in common with islands of both section IV and V *a*, moreover 14 species in common with islands of section V *a* alone, and only 5 species in common with other islands of section IV alone; of the latter one species is also occurring in St. Vincent and in Florida, and one in Trinidad, Mexico and Florida. Thus St. Martin seems to be even more allied with the islands of section V *a*, than with those of section IV.

Can the great number of species common to St. Martin and Guadeloupe, 41, perhaps be attributed to the fact that both islands (St. Martin only partly) are belonging to the same European power, and consequently may have an increased intercourse?

From the five molluscs, recorded from St. Eustatius, the three *Opeas* species are widely distributed, and *Drymaeus elongatus* is recorded from many of the West-Indian islands; the fifth species, *Bulimulus diaphanus,* is common to this island and to Saba, St. Thomas, Vieques, Portorico and Barbados.

As concerns its other molluscs, besides the not further indicated *Stenogyrae*, Saba shares with some other islands of section V *a*: *Amphibulima patula*, with Haïti, Portorico and St. Croix: *Succinea riisei*, and with many islands of section IV and section V *a*, and also with Trinidad: *Helicina fasciata.*

From a geographical point of view the molluscan fauna of the other group of islands is more interesting. A priori one should expect that the molluscs of Curaçao and neighbouring islands, owing to the vicinity of the South-American continent, should be closely allied with those of Venezuela. A study of the molluscs, recorded till now from those islands, informs us however that such a near relation between the molluscan faunas of the Curaçao-group and Venezuela does not exist. Only seven of the 25 species, recorded from the three islands together, are also occurring in Venezuela and Guyana, among them the widely distributed *Opeas micra*, *Melampus pusillus* and *Melampus flavus*; *Drymaeus elongatus*, an Antillean species, of which the occurrence in Venezuela is doubtful; and *Liguus virgineus*, a species from Haïti, very probably imported in Guyana as well as in Curaçao. So may have been also *Pleurodonte incerta* and *Pleurodonte lima*. *Amnicola coronata*, var. *crystallina*, occurring in some of the Antilles and in Central-America, is not yet recorded from Venezuela, as has been the typical *coronata*. The remaining 14 species (not taking in consideration the *Planorbis* spec., too young for identification) seem to be peculiar to the Curaçao-group of islands.

Now it is remarkable that the genera, to which these species are belonging, with exception of the widely spread *Leptinaria*, *Pupa* and *Succinea*, do not occur in the continent of South-America, or only very sporadically. *Cerion* has its greatest development in Cuba and the Bahamas, occurring also in Haïti, Portorico, the Virgin-islands, the Cayman-islands and, semifossil, in St. Croix. *Brachypodella* is distributed in the Greater Antilles, with some species occurring in the Virgin-islands (1), St. Croix (1), St. Martin, St. Barthelemy, Guadeloupe, Marie-Galante, Saintes, Martinique and St. Vincent (1), St. Lucia (1), Barbados (1), Trinidad (1), Central America and Mexico (4), Colombia and Venezuela (2), Ecuador (1). *Microceramus*, to which genus, according to Pilsbry, *Pineria? bonairensis*, nearly related to the *Microceramus* spec. from Curaçao, very likely will prove to belong, is chiefly occurring in Cuba, with some species living in Mexico and Central-America (3), Texas (1), Florida (2), Haïti and Jamaica (1), Bahamas (2). The subgenus *Neosubulina* of *Leptinaria* is restricted to the islands Curaçao and Bonaire with its two species *gloynii* and *harterti*, and a variety of the former. *Tudora* is living in Cuba, Haïti and chiefly in Jamaica, with one species in Mexico. *Cistula* is occurring chiefly in Cuba, with some species living in Haïti, Jamaica, Portorico, Central-America, Yucatan and the Lesser Antilles.

Apart from the Dutch possessions, the only other locality of the Leeward islands, north of Venezuela, between Punta Gallinas and Punta Peñas, from which a mollusc has been recorded, is the small group of islets Los Roques. Crosse (Journ. de Conch. XXI, p. 69; XXII, p. 69) mentions from Los Roques a single species *Ravenia* (nov. gen.) *blandi* (nov. spec.), only found there. According to Pilsbry (Man. of Conch. XIX, p. 29), this shell is closely related to the section *Euspiraxis* of the genus *Spiraxis*; only for the remoteness of the locality he will maintain *Ravenia* as a subgenus. The affinities of this mollusc are to be sought for, not in the South-American continent, but in Jamaica. The genus *Spiraxis* is recorded chiefly from that island; moreover from Cuba, Isle of Pines, Haïti, Mexico and Central-America.

According to our present knowledge we can only state that the islands, north of Venezuela, possess a mollusc-fauna, peculiar to themselves, and that its nearest allies are living in the Greater Antilles and in Central-America.

Leyden Museum, March 11, 1914.

This paper was already printed, when the Museum came in the possession of a collection of shells, purchased from Messrs. Sowerby and Fulton, among which were specimens of

**Cistula raveni* Cr. from Curaçao.
**Tudora pupaeformis* Sow. }
**Chondropoma julieni* Pfr. } from St. Martin.
**Chondropoma igneum* Rve. }

The last named species, so far as I know, has not been recorded until now from St. Martin. Paetel (Catalog der Conch.-Samml., II Abth., 1889, p. 477) gives as its habitat Haïti.

The number of species known from St. Martin, thus becomes 49, the total number recorded from the Dutch West-Indian islands 74, of which the Leyden Museum possesses only 13 species.

April 7, 1914.

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1) These letters are meaning that molluscs, collected in the thus indicated islands, are referred to in the quoted paper or on the cited page. (**A** = Aruba, **B** = Bonaire, **C** = Curaçao, **E** = St. Eustatius, **M** = St. Martin, **S** = Saba).

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